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OXC-0747

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25 July 1960

MEMORANDUM FOR : Deputy Chief, Development Branch, DFD-DD/P

SUBJECT : Trip Report of Visit to Minneapolis-Honeywell Facility at Minneapolis, Minnesota

1. On 20 and 21 July 1960, [redacted] and I visited 25X1 the Minneapolis-Honeywell facility at Minneapolis. The purpose of the visit was for indoctrination into the autopilot, stability augmentation, and air data computer systems. Discussions were held with [redacted] 25X1 25X1 [redacted] A tour of the facility was included in the indoctrination.

2. Air Data Computer: Design of the Air Data Computer is virtually complete. The recent addition of requiring readout of equivalent airspeed was a major modification to the ADC. Contrary to the provisions of paragraph 25X1 1, [redacted] dated 13 July 1960, the ADC will not supply equivalent airspeed to the INS. The INS has no need of this parameter. The ADC will supply static pressure only to the INS. The approach taken by M-H to supply this airspeed parameter appears fairly straight forward and provides the pilot a digital presentation. The need for this parameter, however, is not understood by me at this time and appears to be an needless expense.

3. Autopilot: Design of the autopilot and function control panel appears well in hand. The additional functioned utility of being able to use the autopilot with the MD-1 Vertical Gyro or the MA-1 Compass system was described as a significant improvement in the overall system. This change allows for use of the autopilot in event of INS failure or with the INS completely out of the aircraft as may be the case during much of the flight test.

4. Stability Augmentation System: The system to provide ersatz stability to the vehicle is not so near finalized as the two systems mentioned above. Basically, the SAS has been designed under the concept of maximum safety with redundant channels as required to provide this safety factor. The

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recent addition of the three channel yaw damper system to provide aircraft safety with engine loss thrust decay is a major modification to the system. In spite of all the redundant channels, wiring, and sensing of the SAS, Autopilot, and ADC systems, the basic sensor of the entire aircraft is the pitot tube and there is only one installed with no alternate source. The biggest problem in completing the design of the SAS will occur when the airframe flexible data become available. All calculations to date and all prototype design has been based on the rigid airframe. Space provisions are being made to allow for eight (8) additional electronic "cards" to be intergrated into the system as the flexible parameters become known. At the present time, no one knows whether or not eight cards will be adequate.

5. The overall impression of the indoctrination was very favorable and M-H appeared confident of meeting their commitments, excepting the completed SAS until flexible data become available. M-H expressed an urgent requirement for a sterile cable communications system to expedite information and technical coordination between M-H and Lockheed. They also expressed concern about a suitable cover story for their work in the plant.

SIGNED

[redacted] 25X1

25X1 DEV BR/DPD, [redacted]
25 July 1960
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